Architecture:

- ***Primary spacecraft*** to measure precipitation structure and to provide a calibration standard for the constellation spacecraft
- ***International constellation*** of NASA and contributed spacecraft to provide frequent precipitation measurements on a global basis
- ***Calibration/Validation sites*** with a broad array of precipitation-measuring instruments
- ***Global Precipitation Data System*** to produce and distribute global rain maps, weather data, and climate research products

Primary Instruments:

- Primary Spacecraft
  - Dual-frequency Precipitation Radar
  - Passive Microwave Radiometer
- Constellation Spacecraft
  - Passive Microwave Radiometer

Global Precipitation Measurement Means Improvements In:

- Water Resource Management
- Agriculture
- Policy and Planning
- Transportation
- Forestry
- Natural Hazards Assessment
- Hydrology and Oceanography
- Agriculture
- Weather Forecasting

NASA Earth Science Enterprise

http://www.earth.nasa.gov

GPM

http://gpm.gsfc.nasa.gov

One of the next generation of systematic measurement missions that will measure global precipitation, a key climate factor, with Improved temporal resolution and spatial coverage.

National Aeronautics and Space Administration

NASDA
NATIONAL SPACE DEVELOPMENT AGENCY OF JAPAN

NP-2001-12-416-GSFC

GLOBAL PRECIPITATION MEASUREMENT

GPM

Developing International Partnerships to Understand Global Precipitation and Its Impact on Humankind

GLOBAL PRECIPITATION MEASUREMENT

Objectives:

- ***Improve ongoing efforts to predict climate*** by providing near-global measurement of precipitation, its distribution, and physical processes. Providing this information is a key indicator of the global water cycle and its response to climate change.

- ***Improve the accuracy of weather and precipitation forecasts*** through more accurate measurement of rain rates and latent heating. These are key inputs needed by computer models to produce better weather predictions.

- ***Provide more frequent and complete sampling of the Earth's precipitation.*** This will provide better prediction of flood hazards and management of life-sustaining activities dependent upon fresh water.

GPM

Evolution to the GPM Satellite Constellation

SSM/I ERA

1990 - 1997

TRMM ERA

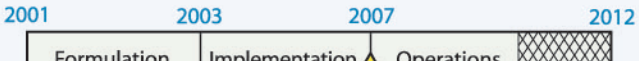
1997 - 1998

TRMM Field Experiments:
- CAMEX-3
- TEFLUN A/B
- TRMM - LBA
- SCSMEX
- KWAJEX

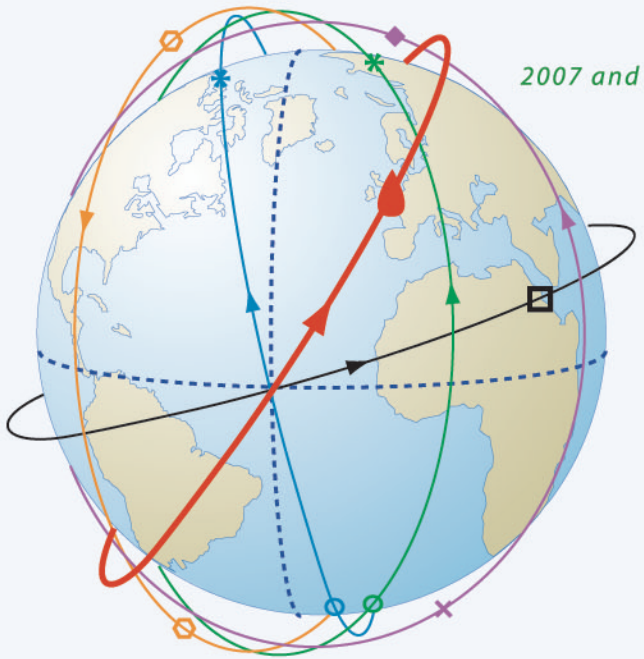
TRMM Ground Validation Sites:
- Darwin, Australia
- Houston, Texas
- Kwajalein Atoll, RMI
- Melbourne, Florida

EOS ERA

2002 - 2007



SYSTEMATIC RAIN MEASUREMENT ERA



2007 and Beyond

GPM Will Include Constellation Members, Validation Supersites, and Regional Dense Rain Gauge Networks

Satellite Legend
- DMSP I & II (SSM/I)
- TRMM (PR, TMI)
- AQUA (AMSR-E)
- ADEOS-II (AMSR-J)
- DMSP/NPOESS I & II (SSMIS/CMIS)
- GPM Primary (DPR, ATMI)
- GCOM-B1 (AMSR-J)
- NASA-GPM I (N-CMR)
- International Partner
- International Partner
- International Partner
- International Partner

Note: Satellites added to constellation when available